

What is claimed is:

1. An illuminating and viewing unit for observing matter in the interior of a vessel by supplying source radiation thereto, said unit comprising:

a housing including a front wall formed of a material that does not transmit said source radiation;

mounting means for attaching said housing to said vessel such that said front wall is directly adjacent said interior of said vessel;

at least one illumination port fixed in said front wall, said at least one illumination port being formed of a material that transmits said source radiation;

radiation guide means supported by said housing for supplying said source radiation to said at least one illumination port such that said source radiation is transmitted through said at least one illumination port to said interior of said vessel;

a detection port fixed in said front wall and spaced from said at least one illumination port, said detection port being formed of a material that transmits detectable radiation; and

detection means arranged in said housing for sensing radiation transmitted through said detection port from said interior of said vessel.

2. The illuminating and viewing unit according to claim 1, wherein said at least one illumination port is a plurality of illumination ports.

3. The illuminating and viewing unit according to claim 2, wherein said detection port is centrally located with respect to said plurality of illumination ports.

4. The illuminating and viewing unit according to claim 1, wherein said at least one illumination port has a different thickness than said detection port.

5. The illuminating and viewing unit according to claim 4, wherein said at least one illumination port is thinner than said detection port.

6. The illuminating and viewing unit according to claim 5, wherein said at least one illumination port has a smaller surface area facing said interior of said vessel than said detection port.

7. The illuminating and viewing unit according to claim 1, wherein said front wall is formed of metal.

8. The illuminating and viewing unit according to claim 7, wherein said at least one illumination port is formed of glass and said glass is fused with said metal.

9. The illuminating and viewing unit according to claim 7, wherein said detection port is formed of glass and said glass is fused with said metal.